

SPECTRUM OF PENETRATING CARDIAC INJURIES FROM FLYING FEATHERS

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ABSTRACT

Flying feather is a traditional street weapon, which is believed to be originated from Philippine. It is a famous weapon in Tawau, Sabah, shot within short distance and being used with the aim to debilitate the victims. Some may even apply poison at the tip of the weapon. We report two cases of severe chest injuries in resulting from flying feathers. Case 1, a 25-year old man sustained left sided hemothorax with anterior right ventricle injury. He underwent thoracotomy and was discharged well. Case 2, a 40-year old man, presented to emergency department with no signs of life, sustained penetrating injury to the left second intercostal muscle, the pericardium and the anterior wall of the right ventricle adjacent to the interventricular septum. These cases highlight the severity spectrum of cardiac injury resulting from flying feathers.

Key words: *Flying feather, cardiac injury, thoracotomy, emergency department*×

BACKGROUND

“Pitik” or also known as the flying feather, is a self-made, light, small weapon that has been causing nuisance to the people in Tawau District, Sabah. This small arrow is shot randomly into the crowd from a distance by using slingshot, especially during festivities for amusement. As a result, patients often present to Emergency and Trauma Department in pain, with the arrow attached to their body part, complaining of being assaulted by an unknown person. After adequate analgesia, the Orthopedic or Surgical Department team is then summoned for the removal of this foreign body. Almost all patients will be discharged on the same day or the following day. However, in this report, we will be highlighting a devastating spectrum of injury if it is shot at a short distance. The aim is to inflict disability. We have received two patients with penetrating wound to the chest and it was found out to be a penetrating cardiac injury inflicted by this weapon. One patient was successfully sent for exploratory thoracotomy after a short period of stabilization in Emergency Department. However, another patient died at the pre-hospital care setting. These two cases reflect to us that injuries from pitik should never be underestimated. All patients must be assessed properly and the correct management should be delivered to them. Any injury to the chest by this weapon should be assessed for possibility of cardiac injury as it has a high mortality if neglected. Delayed in seeking medical treatment can contribute to the mortality if major organ has been injured.

SERIES OF CASES

Case 1

A 25-year-old man was allegedly shot by a traditional weapon originated from the Philippines known as the flying feather (FF) by an unknown attacker while walking alone (Figure 1). The arrow punctured his left chest. He suffered from severe chest pain, difficulty in breathing and generalized body weakness. There was no active bleeding from the injured part.



Figure 1: Flying feather in situ at left mid axillary line at four cm below the nipple line

On clinical examination, he appeared drowsy and lethargic. His Blood pressure, pulse rate, respiratory rate, temperature and oxygen saturation were 84/65 mmHg, 78/min, 20/min, 36.8°C and 100% respectively. His chest examination revealed the (free fluid) FF at the left mid axillary line four centimetres below the nipple line (Figure 1). The attached FF had a 4 cm arrow like, long nail with blue colour

plastic rope feathered tail attached to the end of the nail. It moved in a beating fashion. Respiratory examination revealed reduced breath sound over left side of the thorax. Examination of other systems was normal.

Blood investigation results were as follow: Hb 14.3 g/dl, TWBC $15.3 \times 10^9/L$, Platelet $472 \times 10^9/L$, PCV 45%, Na 142 mmol/L, K 3.8 mmol/L and Urea 2.9 mmol/L. The electrocardiogram showed sinus rhythm with ST elevation in lead V2 and V3 and T inversion in lead V3. Anteroposterior view chest radiograph (Figure 2) showed the trajectory of flying feather (medial, posterior and superior to the left lower chest). The tip of the flying feather may have penetrated the diaphragm or the heart. There was no pneumothorax, hemothorax or pneumomediastinum visible on CXR. He was resuscitated with 1 litre of crystalloid solution, 500 mL of colloid solution and 500 mL of packed cell. Post-resuscitation blood pressure was 125/95 mmHg. Computed Tomography (CT) scan of the thorax (Figure 3) demonstrated a left sided hemothorax with trajectory images of the flying feather penetrated the anterior right ventricle of the heart.

He then underwent an emergency thoracotomy. The intraoperative findings were 1) a 1.5 cm laceration wound at the anterior right ventricle breaching the pericardium and injuring the myocardium with minimal amount of haemorrhagic pericardial effusion and 2) 300 ml of blood clot in left hemithorax. The flying feather was easily removed and the wound was cleaned and sutured. He was hemodynamically within normal range throughout the operative procedures.



Figure 2: AP CXR showing the trajectory of flying feather (medial, posterior and superior to the left lower chest).

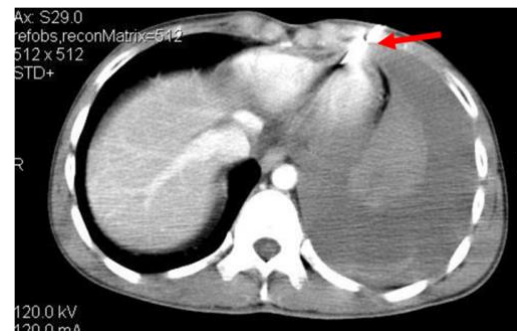


Figure 3: CT Scan showing left hemothorax with trajectory artefact of the flying feather (arrow)

Post-operatively, patient was admitted to the intensive care unit and throughout the stay, he was complicated by sepsis with coagulopathy, hypokalaemia, hypomagnesaemia, and pericarditis. After intensive management, he was discharged well after 9 days of hospitalization. After one month, he was healthy without any complications on follow-up. He was given an appointment for next evaluation but defaulted the follow up.

Case 2

This is a case of a 40-year-old man, construction worker who was sharing a house with a few others. On the night of the incident, he was woken up from sleep by his co-workers who were rowdy and noisy during a drinking session. He tried to ask them to quiet down but suddenly fell down and died within minutes.

On physical examination, his T-shirt was soaked with blood. A flying feather was seen penetrating the front of his left chest, near the midline (Figure 4). Chest radiograph showed the steel shaft of the FF had penetrated his heart. (Figure 5)



Figure 4: T-shirt was soaked with blood. A flying feather was seen penetrating the front of his left chest, near the midline

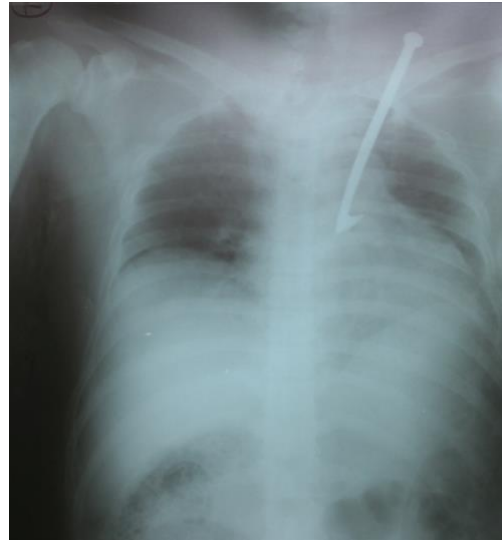


Figure 5: Chest radiograph showed the steel shaft of the flying feather had penetrated his heart.

The autopsy examination revealed a penetrating injury to the left second intercostal muscle, the pericardium and the anterior wall of the right ventricle adjacent to the interventricular septum. (Figure 6) There was haemopericardium consisting of 120 ml of fluid blood and 110 grams of blood clots. The flying feather that penetrated the deceased's chest measured 12.7 cm long. One end of the metal shaft was flat with sharp tip and had a side hook. (Figure 7)



Figure 6: The arrow penetrated the pericardium and the anterior wall of the right ventricle adjacent to the interventricular septum



Figure 7: The flying feather that penetrated the deceased's chest measured 12.7 cm long. One end of the metal shaft was flat with sharp tip and had a side hook

DISCUSSION

The “flying feather” is a traditional street weapon, which is believed being originated from the Philippines and locally known as ‘pitik’ or plem paddle. It is a very famous weapon in Tawau, Sabah, East Malaysia and being used with the aim to injure the victim. Additionally, some may even put poisons at the tip of the weapon. This kind of injury involves a mechanism in which the attacker will aim the arrow straight to the patient and usually released within a short distance. Shots will randomly be made into the air and will randomly hit any unlucky victim.

Our centre has been receiving a lot of flying feather cases but unfortunately we do not have data regarding its prevalence. However, most of the injuries were minor resulting in injuries to the extremities, superficial abdominal wall injury or to the face without breaching any cavities. Otherwise, the case highlighted here are

of the rare injury which involve the major organ and even fatal.

This weapon is made using simple instrument which can be found easily in the street including nail, plastic rope and rubber band. The sharp end of the nail is made flat by using a hammer first before sharpened its tip and the distal end of it being indented to make this weapon difficult to be taken out as the flesh will stuck in between the curvature. The nail will then be launched using a rubber band.

We have highlighted the magnitude of injuries resulting from this street weapon. Therefore, it should be respected and treated the same way as any other penetrating wound. Damage Control Resuscitation should be done and patient should undergo emergency exploratory surgery if hemodynamically unstable¹. Aggressive fluid resuscitation will disturb the haemostatic plug and resulting in worsening of lung and heart function^{2,3}. Left untreated or with substandard care, it will cause a mortality similar to other causes of penetrating cardiac injuries^{4,5}.

CONCLUSION

Injuries caused by the flying feather could be debilitating and may result in death. We highlighted that no matter how trivial the external injury might seem by this small weapon, proper assessment and adequate resuscitation should be made if hemodynamically unstable.

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